the chank itself. The shell-trumpet enters into ceremonies in Malabar, Siam, etc.; and signal-horn shells are used in Japan. In certain of the Pacific Isles their uses are many. In the New World the shell-trumpet was known in pre-Columbian times, and entered into the religious ceremonial of the Aztecs. Ancient Mexican manuscripts provide evidence of its use in temple worship in precisely the same way as in India. The shell-trumpet was also employed by the Incas and other ancient peoples, and survives to-day in several places.

DUBLIN.

Royal Irish Academy, February 14.—Rev. J. P. Mahaffy, president, in the chair.—J. G. **Leathem**: Periodic conformal curve-factors and corner-factors. The paper deals with the repeated conformal representation of the doubly connected region which is bounded internally by a closed curve or polygon and is externally unbounded, upon successive semi-infinite strips of a half-plane. Smooth curves are dealt with by means of periodic conformal curve-factors; and the properties of such curve-factors and some comprehensive formulæ for them are discussed. Periodic corner-factors are defined, and it is shown how they give the required transformation in the case in which the internal boundary is polygonal. The periodic curve-factor is exhibited as the limit of a product of periodic corner-factors, and special types are deduced. The results are interpretable in terms of two-dimensional fields of liquid or electric flow, or electric induction. Fields with logarithmic singularities (sources, vortices, electrodes, etc.) are then discussed, and it is shown how, by a double transformation, such fields can be specified for any region the conformal representation of which has been formulated. Thus the field due to a line-charge in presence of a charged conductor in the form of an elliptic cylinder or a polygonal prism is readily determined, and the method is equally applicable to many other problems of similar type.—G. H. **Carpenter**: The Apterygota of the Seychelles. The collection described was made by members of the Percy Sladen Trust Expedition, and comprises thirteen species of Thysanura and eighteen of Collembola. As only three Apterygota were hitherto recorded from the Seychelles, most of the species now enumerated are regarded as new, and three remarkable Machilids are referred to a new genus. Structural details of the jaws of Isolepisma, Lepidospora, Lepidocampa, Heteromuricus, and Cremastocephalus are given, together with an account of the genital appendages in Lepidospora and Lepidocampa. The presence of the latter genus in the Seychelles is of considerable geographical interest; together with some of the Collembolan genera it indicates Malayan and Indian affinities for the fauna of the granitic islands of the Seychelles proper, while the species from the coral islands of the Farquhar and Aldabra groups have on the whole Malagasy and African relationships.

PARIS.

Academy of Sciences, February 14.—M. Camille Jordan in the chair.—G. **Bigourdan**: A work of F. Viète, supposed to be lost, "l'Harmonicon cœleste."—B. **Baillaud**: Remarks concerning the determination of the difference of longitude between the Observatories of Paris and Washington. An account of the work of the French-American Committee commencing October, 1913, in which wireless signals between Arlington and the Eiffel Tower were utilised. The final result adopted is 5h. 17m. 36·67s.—Henry **Le Chatelier**: The law of solubility. A reply to M. Colson.—T. H. **Gronwall**: Deformation in conformable representation.—Œchsner de **Coninck** and M. **Gérard**: The atomic weight of bismuth. By the reduction of bismuth chloride in hydrogen the value 208·50 was obtained for the atomic weight of bismuth.—L. Fernandez **Navarro**: The discovery of a basalt outcrop in the Sierra de Guadarrama (Spain). This is the only known volcanic outcrop in the centre of the *massif*.—M. **Deprat**: The stratigraphic series in North Tonkin.—Ph. **Glangeaud**: The volcanic Pliocene of the Saut de la Pucelle (Puy-de-Dôme).—V. **Vincent**: The circulation of manganese in natural waters. Manganese is probably present in natural waters as the bicarbonate. The oxides of manganese, in presence of carbon dioxide, do not dissolve to the same extent as the carbonate.—G. **Bourguignon**: The stimulation of nerves by discharges from condensers.—E. **Colardeau** and J. **Richard**: A stereoscopic arrangement for the examination of radiographic proofs, either with normal or pseudoscopic relief.—Ch. J. **Gravier**: The madrepores collected by S.A.S. the Prince of Monaco in the great depths of the North Atlantic.—A. **Vayssière**: A Notochiton and some Gasteropods from the second expedition of Dr. Charcot.—J. **Bounhiol** and L. **Pron**: A case of complete hermaphroditism in *Chrysophrys aurata*.

BOOKS RECEIVED.

The Mathematical Theory of Probabilities and its Application to Frequency Curves and Statistical Methods. By A. Fisher. Translated and edited with the assistance of W. Bonynge. Vol i., Mathematical Probabilities and Homograde Statistics. Pp. xx+171. (New York: The Macmillan Company; London: Macmillan and Co., Ltd.) 8*s.* 6*d.* net.

Macmillan's Geographical Exercise Books. iv., The Americas. With Questions by B. C. Wallis. Pp. 48. (London: Macmillan and Co., Ltd.) 6*d.*

Thomas Alva Edison. By F. Rolt-Wheeler. Pp. ix+201. (New York: The Macmillan Company; London: Macmillan and Co., Ltd.) 2*s.* net.

Board of Agriculture and Fisheries. Fishery Investigations. Series ii., Sea Fisheries. Vol. iii., No. 2. Report on Sexual Differentiation in the Biology and Distribution of Plaice in the North Sea. By A. E. Hefford. Pp. 73. (London: H.M.S.O.; Wyman and Sons, Ltd.) 4*s.*

National Health Insurance. Medical Research Committee. Report of the Special Advisory Committee upon Bacteriological Studies of Cerebro-spinal Fever during the Epidemic of 1915. Pp. 64. (London: H.M.S.O.; Wyman and Sons, Ltd.) 6*d.*

Napier Tercentenary Memorial Volume. Edited by Dr. C. G. Knott. Pp. xi+441. (London: Published for the Royal Society of Edinburgh by Longmans and Co.) 21*s.* net.

Wireless Transmission of Photographs. By M. J. Martin. Pp. xi+117. (London: Wireless Press, Ltd.) 2*s.* 6*d.* net.

Harvey's Views on the Use of the Circulation of the Blood. By Prof. J. G. Curtis. Pp. xi+194. (New York: Columbia University Press; London: Oxford University Press.) 6*s.* 6*d.* net.

The Athenæum Subject Index to Periodicals, 1915. Science and Technology, with Special Reference to the War in its Technological Aspects. Pp. 79. (London: Athenæum Office.) 2*s.* 6*d.* net.

Woburn Experimental Fruit Farm. Fifteenth Report of the Woburn Experimental Fruit Farm. Pp. 83. (London: Amalgamated Press, Ltd.) 2*s.* 3*d.*

British Fungi and How to Identify Them. By J. H. Crabtree. Pp. 62. (London: C. H. Kelly.) 1*s.* net.

Instincts of the Herd in Peace and War. By W. Trotter. Pp. 213. (London: T. Fisher Unwin, Ltd.) 3*s.* 6*d.* net.

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Examples in Magnetism for Students of Physics and Engineering. By Prof. F. E. Austin. Second edition. Pp. 90. (Hanover, N.H.: Prof. F. E. Austin; London: E. and F. N. Spon, Ltd.) 1 dollar 10 cents.

A New Table of Seven-Place Logarithms of all Numbers from 20 000 to 200 000. By E. Sang. Pp. xviii+365. (London: C. and E Layton.) 21*s*. net.

Department of Commerce. U.S. Coast and Geodetic Survey. Geodesy. Application of the Theory of Least Squares to the Adjustment of Triangulation. By O. S. Adams. Pp. 220. (Washington: Government Printing Office.)

State of Connecticut. Public Document No. 24. Thirty-eighth Annual Report of the Connecticut Agricultural Experiment Station, 1914. Pp. xiv+448. (Hartford, Conn.)

The Endocrine Organs: an Introduction to the Study of Internal Secretion. By Sir E. A. Schafer. (London: Longmans and Co.) 10*s*. 6*d*. net.

Scientific Papers. By Sir G. H. Darwin. Vol. v., Supplementary Volume containing Biographical Memoirs. By Sir Francis Darwin and Prof. E. W. Brown. Lectures on Hill's Lunar Theory, etc. Edited by F. J. M. Stratton and J. Jackson. Pp. lv+81. (Cambridge: At the University Press.) 6*s*. net.

Elements of Mineralogy. By F. Rutley. Revised by H. H. Read. Nineteenth edition. Pp. xxii+394. (London: T. Murby and Co.) 3*s*. 6*d*. net.

The Tribes and Castes of the Central Provinces of India. By C. V. Russell, assisted by Rai Bahadur Hira Lāl. Four vols. Vol. i., pp. xxv+426. Vol. ii., pp. xi+540. Vol. iii., pp. xi+589. Vol. iv., pp. xi+608. (London: Macmillan and Co., Ltd.) 42*s*. net.

The Homeland Handbooks. Penzance and the Land's End District. Edited by J. B. Cornish and J. A. D. Bridger. Pp. 123. (London: Homeland Association, Ltd.) 6*d*. net.

Manuals of Chemical Technology. vi., The Salt and Alkali Industry, including Potassium Salts and the Stassfurt Industry. By Dr. G. Martin, S. Smith, and F. Milsom. Pp. viii+100. (London: Crosby Lockwood and Son.) 7*s*. 6*d*. net.

DIARY OF SOCIETIES.

THURSDAY, MARCH 2.

ROYAL SOCIETY, at 4.30.—The Antiseptic Action of Substances of the Chloramine Group: J. B. Cohen, H. D. Dakin, M. Daufresne and J. Kenyon.—The Structure of the Dicynodont Skull: I. J. B Sollas and Prof. W. J. Sollas.—Analyses of Agricultural Yield. Part III. The Influence of Natural Environmental Factors upon the yield of Egyptian Cotton: W. L. Balls.—The Function of Chlorophyll, Carotin and Xanthophyll: A. J. Ewart.

ROYAL INSTITUTION, at 3.—Recent Excavations in Mesopotomia—The Northern Capitals, Nineveh and Asshur: Prof. L. W. King.

CHILD STUDY SOCIETY, at 6.—The Danish Child at School: A. E. Hayes.

LINNEAN SOCIETY, at 5.—Exhibit of *Giardia* (*Lamblia*) *intestinalis* from cases of Diarrhœa in Soldiers, the Infections being contracted in Flanders: Dr Annie Porter.—Larval and Post-Larval Stages of *Jasus lalandii*: Dr. J. D. F. Gilchrist.—The August Heleoplankton of some North Worcestershire Pools: B. Millard Griffiths.—The Distribution of the Box-tree, *Buxus sempervirens*: Dr. Otto Stapf.

FRIDAY, MARCH 3.

ROYAL INSTITUTION, at 5.30.—Corona and other Forms of Electric Discharge: Prof. S. P. Thompson.

GEOLOGISTS' ASSOCIATION, at 7.30.—The Oil-fields of Trinidad: V. C. Illing.

MONDAY, MARCH 6.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30.—Some little-known Polynesian Settlements near the Solomon Islands: Charles M. Woodford.

ARISTOTELIAN SOCIETY, at 8.—Sense-Data and the Physical Object: Prof. T. Percy Nunn.

SOCIETY OF CHEMICAL INDUSTRY, at 8.

SOCIETY OF ENGINEERS, at 5.30.—Sewage and its Precipitation: R. Brown.

TUESDAY, MARCH 7.

ROYAL INSTITUTION, at 3.—The Plant and the Soil—Man's Control: Dr. E. J. Russell.

ZOOLOGICAL SOCIETY, at 5.30.—Kinematographs of African Animals: H. K. Eustace.

INSTITUTION OF CIVIL ENGINEERS, at 5.30.—Industrial Development: Harold Cox.

RÖNTGEN SOCIETY, at 8.15.—*Adjourned Discussion:* The Injurious Effects produced by X-rays.—The Use of Inverse Current: A. C. Gunstone.

WEDNESDAY, MARCH 8.

GEOLOGICAL SOCIETY, at 5.30.—Fossil Insects from the British Coal Measures: H. Bolton.

ROYAL SOCIETY OF ARTS, at 4.30.—Optical Appliances in Warfare: C. R. Darling.

THURSDAY, MARCH 9.

ROYAL SOCIETY, at 4.30.—*Probable Papers:* The Distribution of Intensity in Broadened Spectrum Lines: Prof. J. W. Nicholson and T. R. Merton.—Prof. Joly's Method of avoiding Collision at Sea: Prof. H. C. Plummer.

ROYAL INSTITUTION, at 3.—Recent Excavations in Mesopotamia—The Southern Capital, Babylon: Prof. L. W. King.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—Continuous-current Railway Motors: E. V. Pannell.

OPTICAL SOCIETY, at 8.—A Simple Focometer for the Determination of Short Focal Lengths both Negative and Positive: T. F. Connolly.—The Manufacture and Testing of Prismatic and other Compasses: F. E. Smith.

FRIDAY, MARCH 10.

ROYAL INSTITUTION, at 5.30.—Illusions of the Upper Air: Sir Napier Shaw.

ROYAL ASTRONOMICAL SOCIETY, at 5.

SATURDAY, MARCH 11.

ROYAL INSTITUTION, at 3.—Radiations from Atoms and Electrons: Sir J. J. Thomson.

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